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AMERICAN SCHOOL HEALTH ASSOCIATION

Organized 1927

Devoted to the interests and advancement of those engaged in school health activities and the services rendered by them

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THE JOURNAL OF SCHOOL HEALTH

Devoted to the interests and advancement of school health service and instruction. Your participation by membership is solicited.

Vol. X SEPTEMBER, 1940 No. 7

REPORT OF THE TUBERCULOSIS COMMITTEE OF THE AMERICAN SCHOOL HEALTH ASSOCIATION FOR 1939

Committee Meetings. The Tuberculosis Committee of the American School Health Association was appointed by Dr. Charles Keene as President in 1934. The first regular meeting was held on June 25, 1935, in the Trudeau Memorial Room at Saranac Lake, New York; the second, in the Roosevelt Hotel in New Orleans on April 25, 1936; the third, in the Schroeder Hotel in Milwaukee, Wisconsin, on June 2, 1937; and the fourth in the Biltmore Hotel in Los Angeles, California, June 21, 1938. A meeting was scheduled in the Statler Hotel in Boston in 1939, but so few members were present that there was only an informal discussion of the work. However, plans were made and carried out by correspondence.

Committee Reports. Reports have been published and may be found in the following journals: School Physicians' Bulletin, December, 1935; the Journal of School Health, January and February, 1937; also published in part in the Bulletin of the National Tuberculosis Association in January, 1937; the Journal of School Health, January, 1938; and the Journal of School Health, November, 1938.

The Tuberculin Test. Since its organization the members of this Committee have recognized that the best criterion of the tuberculosis situation in any family, state, or nation, is the incidence of tuberculin reactors rather than mortality and morbidity rates, and, therefore, we have strongly recommended the tuberculin test among school children of all ages as well as pre-school children. We are cognizant of the work of the occasional critic of the tuberculosis test and are cognizant of the various case-finding methods that have been employed throughout the world, yet our personal experiences, combined with those of so many others, compel us to continue to recommend the tuberculin test as the first line of attack and the most fundamental step in the tuberculosis control program of any school system. In its earlier reports, the Committee recommended that, in places where funds are not available to test all school children with tuberculin, those in the first grade and the seniors in high school be tested, and as many others as possible.

Although numerous methods of administering the tuberculin test, such as the dermal of Pirquet, the percutaneous of Moro, with its modifications known as the tape test and the patch test, are available, the members of the Committee are strongly of the opin-

ion that the intracuteaneous method of Mantoux, which has been so standardized in this country, is superior to all others. We strongly recommend Purified Protein Derivative, with the usual second dose for those who do not react to the first, or a dose of Old Tuberculin, consisting of one-hundredth or one-tenth milligram, and a second dose consisting of a milligram for those who do not react to the first. We urge that before beginning a testing program, tuberculin be procured for which the potency has recently been found satisfactory. The tuberculin test serves as a screen to select those persons in a school system who have tuberculous lesions in their bodies; evidence is accruing indicating that a tuberculin reaction signifies the presence or recent presence of living tubercle bacilli in the lesions. It has long been known that following infection with tubercle bacilli a period of three to seven weeks may be required for the tissues to become sensitized. The fact is also well established that in some persons the foci of tubercle bacilli die, following which the tissues no longer react to tuberculin. So far as we know, the intensity of the reaction has no relationship to the amount of disease present. Unfortunately, the sensitivity of the tissues to the protein of the tubercle bacillus apparently is not modified when endogenous or exogenous reinfections occur. Therefore, every one in adult life who reacts to tuberculin should be carefully examined to determine insofar as possible, whether clinical forms of disease are present.

When tuberculosis in communicable form exists in the child's home or among other close adult associates, the child is very likely to develop primary tuberculosis complexes in his body, which can be diagnosed with a high degree of accuracy by the tuberculin test. Thus, finding the reactors in any school system gives one a clue to the existence of a contagious case among the child's present or past associates. In most parts of this country we can almost eliminate the animal source of infection, since the veterinarians and their allies have so nearly eradicated the disease from the cattle herds. Therefore, one can now limit the search for the source to human beings and nearly always to adults, since children prior to adolescense rarely develop tuberculosis in a contagious stage. The Committee is of the opinion that the tuberculin test should be administered to every child in a school system where a follow-up program to find the sources of contagion is feasible. Clinical, chronic, pulmonary tuberculosis rarely develops before adolescence, therefore, one need not proceed further with examination even of tuberculin reactors in the grade school group. However, inquiry should be made into the possibilities of exposure in the homes or to other adult associates of every child in this group who reacts to tuberculin.

When we examine adults for tuberculosis, we always inquire whether they know of having been exposed at any previous time to

persons with contagious tuberculosis. Likewise, when we find a child who reacts to tuberculin, we should seek the contagious case. Among the older grade school children it may be difficult to find the source of the exposure because the number of adult associates has become large. Nevertheless all efforts are worth while, for a sufficient number of sources will be found to justify them. Among the younger grade school children who have had contact with smaller numbers of adults, one may expect the tuberculin reaction to lead to the source more readily.

This work has a double value: First, many such adults have their disease detected in this manner before it has become hopelessly advanced; and second, contact with the originally infected children, as well as other children and adults, may be broken when the source is known. This kind of work can be done in any school system with profit.

When adolescence approaches and thereafter, for some reason that we do not fully understand, the chronic, destructive form of pulmonary tuberculosis begins to make its appearance among tuberculin reactors and increases in prevalence with the decades of life. Therefore, the Committee strongly recommends that the tuberculin test also be administered to *every* high school student for two reasons: First, as a means of obtaining a clue to a source of infection, and second, as a means of selecting all reactors for further examination.

The X-ray Examination of the Chest. We believe that the x-ray film examination of the chest is indicated for every adult tuberculin reactor for four main reasons: First, parts of the lungs lend themselves well to this kind of examination; second, probably the chronic clinical form of tuberculosis attacks the lungs more frequently than any other part of the body; third, chronic clinical pulmonary tuberculosis is likely to become contagious and, therefore, it is important that it be detected in as early a stage as possible; fourth, the x-ray film reveals evidence of disease in the lung on an average of two or three years before there are symptoms or significant abnormal physical signs.

The celluloid film has been in general use since the time of the World War. When it was introduced it was strenuously opposed by x-ray workers who greatly preferred the old glass plates. Likewise many persons who have now long used the celluloid film have become so accustomed to it that they strenuously oppose any departure from it. Because of the demand for rapid x-ray work, that is, the making of films in much larger number and in less time than was possible by the usual method, there has been developed a rapid camera, in which paper film in rolls is used. The handling of the film and the manipulation of the camera has been reduced to a minimum, so that work can be done several times as fast by this method as by the usual procedure. Moreover, no apologies are

necessary for the quality of the paper film in chest examinations. It appears to be as effective as the celluloid film in finding small or gross lesions in the lungs. Where large numbers of persons have had x-ray films made of the chest with both celluloid and paper films, it has been found that no significant disease casts shadow on the celluloid that is not also perfectly obvious and clear on the paper film. When the rapid camera is used and a sufficient number of examinations are made, the developed films are delivered to physicians for descriptions at a cost of only seventy-five cents to one dollar apiece. If one does not have a sufficient volume of work to justify the importation of a rapid camera, paper film can be procured for individual work already cut in the size desired, at a cost of approximately one-half that of celluloid films. If one desires to make stereoscopic examinations, paper film serves the purpose the same as celluloid, the only difference being that transmitted light is used in viewing celluloid and reflected light in viewing paper films, both singly and stereoscopically. The paper film is stored as easily and is fully as durable as celluloid.

One fact which the members of the Committee desire to emphasize is that one x-ray film examination on either celluloid or paper cannot establish a diagnosis. The film is an imperfect method of examination and aids us only in the detection of macroscopic objects; that is, lesions in the lungs which are sufficiently large that they could be seen by the naked eye if the lung were viewed directly, cast shadows on the film which are seen by the usual naked eye examination.

When calcium is deposited in the foci of the primary complex, it can be detected by x-ray film only about one-half as often as by postmortem examination. Therefore, failure to see such evidence on the x-ray examination by no means rules it out. There is an unfortunate practice of interpreting all sharply outlined, dense shadows in the lung field and hilum region as due to deposits of calcium and considering all such shadows as representing primary tuberculosis. Postmortem examinations have shown that not all such shadows are due to calcium deposits and many simply represent blood vessels, and some represent lesions not caused by tuberculosis. It is also known that some calcium deposits which were caused by tuberculosis no longer contain living tubercle bacilli and, therefore, the individual with them may have lost all sensitivity to tuberculin. Thus, by x-ray film examination it is not possible to differentiate with accuracy between shadows caused by deposits of calcium and other conditions, or to determine the present status of disease in or about such areas.

The etiologic agent responsible for infectious disease is microscopic and, it is, therefore, too much to hope that a macroscopic method could determine etiology. Therefore, after the tuberculin reactors have been screened from the school system, and from this

group those with macroscopic disease which casts shadows have been screened by the x-ray examination, one must proceed with a complete examination to determine etiology. Unless this is done, physicians will continue to diagnose tuberculosis from x-ray shadows caused by such conditions as pneumonia, fungus disease, silicosis, and abscess.

We strongly recommend that x-ray films of chests be preserved indefinitely. A film that shows no evidence of disease should be preserved the same as the one that does, for comparison with subsequent films, which should be made periodically. An extremely unfortunate practice is that of discarding films after one, five, or more years. A film of the chest should be preserved as long as the person lives and it often becomes of great value, even for research work, after the death of the subject.

Other methods of making x-ray examinations of the chest, such as the micro-film and roentgen fluorography, are on trial in various parts of the world. However, not enough reports have been made to justify the Committee's condemning or recommending them at this time.

The use of the fluoroscope as a substitute for the x-ray film examination is not recommended as a routine procedure unless one has the best equipment available and is especially trained in its use. While the ordinary fluoroscopic examination may bring to light 80 to 95 per cent of the macroscopic pulmonary lesions, this is too inaccurate for work in a school system.

Surveys and Maps. It was decided that a survey should be made of the tuberculosis work being done among school children of the nation and an attempt made to assemble such information from the secretaries of the state tuberculosis associations. A questionnaire was sent to the secretaries which met with a splendid response. From this questionnaire a graphic map of the United States was prepared which showed the incidence of tuberculin reactors among school children as reported by the state secretaries. The ages of children tested, together with such factors as selection of those tested, made it impossible to present an ideal map. For example, in one state the testing was limited to high school students; in another to grade school children; and in another to children known to be in contact with tuberculous patients. Thus, one state would receive a high rating, another a low one because of these differences in groups tested. There was nothing that our Committee could do about such a situation, because each state was doing as much as it possibly could under the circumstances, and was carrying on the work that seemed most effective to local groups. However, we felt that this map was worth while from the standpoint of stimulating interest of workers as well as giving them some idea as to the magnitude of the problem in various parts of the country and in various counties of the same state. This we

felt would lead to more testing with tuberculin, until eventually fairly uniform figures would be available throughout the nation; that is, persons of a given age and under similar circumstances would have been examined in all the states so that comparisons could be made. Thus, the Committee decided that it would be worth while to prepare such a map annually. However, experience has shown that changes are not yet occurring fast enough to justify such frequent preparation of maps. It now appears that a map every three to five years is sufficient. Moreover, a good deal of tuberculosis survey work, which was initiated by state and local tuberculosis associations, is being turned over to official agencies, such as state and local boards of health. Therefore, it has become necessary to obtain our information from such official agencies in some states in recent years.

*Study of Changes in Infection Attack Rate.** In 1937 the Committee decided to encourage the testing of first-grade school children in several centers of the nation over a period of five years; that is, each year to test all of the entering children in order to determine whether from year to year there is any change in the infection attack rate. This would provide a good deal of information with reference to infections occurring in the home and from adult associates during the pre-school age. It has been somewhat difficult to get such studies established. However, we now have several centers under discussion, where this work will probably begin soon.

Committee Representatives in Each State. The members of the Committee were of the opinion that data should be assembled from each state and that a physician should be asked to represent the Committee, who would take the responsibility of compiling data and submitting it to us. It seemed best to ask the state tuberculosis association secretaries to appoint or have their organizations elect a physician, who would work with the state tuberculosis association, the state board of health, the state education association, and the medical profession, and all other groups interested in this problem.

These physicians have been most cooperative, and some of them have done a large volume of work in determining just what the true situation is in their states with reference to adequate examinations for tuberculosis and controlling the disease in the school systems.

Teachers and Other Personnel of School Systems. The fact that the incidence of the chronic, clinical form of pulmonary tuberculosis increases among human beings with the decades of life becomes extremely significant in our school systems, for here we have older persons employed in such positions as faculty members, cooks, janitors, engineers, and bus drivers, who by reason of their

*A list of these state representatives is on file in the Editorial Office of this Journal.—Ed.

age are more likely to have contagious tuberculosis than even the high school students.

Since children are compelled by law to attend school, it is imperative that school and health authorities jointly insure a healthy school environment. Obviously, it is impossible to insure such an environment unless our search for tuberculosis and our methods of controlling this disease extend to the personnel of every school system.

The problem of tuberculosis among teachers and other members of school personnel has been recognized in various nations. For example, Ickert of Germany in 1930 applied tuberculin tests to children who were being taught by tuberculous teachers and found that in the classrooms of those teachers who were known to have the disease in a contagious form from 32 per cent to 93 per cent of the children reacted to tuberculin, while in the rooms of those who did not have contagious tuberculosis only 25 per cent of the pupils reacted to this test.

In the Journal of School Health, Dr. Keene presented an abstract in February, 1938, which includes the following information from a paper presented by Bernard and Lafosse before the June 12, 1937, meeting of the Paris Tuberculosis Society. They reported the case of a school teacher who had been refused as a recruit by the military authorities because of pulmonary tuberculosis. Three months later he resumed his activities as a teacher, and the incidence of tuberculin reactors among his pupils rose to 90 per cent as compared to an average of 30 per cent for other children of the same age and environment. Indeed, one of the children whom he taught died of tuberculous meningitis. Therefore, the authors recommended the tuberculin test of all school children at intervals of six months or less where many are placed in a single room, and they recommend especially a strict surveillance of all teachers and other members of personnel of any institution in which children are brought together for prolonged periods of time.

In this country, Slater and Jordan may be regarded as pioneers in the study of this problem and in calling it to the attention of the nation. They have reported numerous cases. Surveys conducted by them and by Lindberg, Harrington, and others, and articles by a number of other workers, particularly Lees of Pennsylvania, and Ryan of New York, have proved beyond all doubt that a serious problem exists among the teachers and personnel of the school systems of the United States. Actual surveys have shown that 1.5 to 2.0 per cent of teachers had pulmonary tuberculosis and should be treated. Obviously, the problem is much larger than this would indicate, since these findings were on a single examination, and other potential cases at that time would be actual cases as the years pass. Lees has estimated that approximately 16,000 teachers would be found to have clinical, pulmonary tuberculosis if a single

examination were made of all teachers throughout the nation at one time. The members of your Committee were cognizant of the problem at the time of their appointment. In fact, some of them had already published articles on the subject.

At each meeting, the problem was discussed, and in 1937 the Committee came to the conclusion, that an article should be prepared and signed by its members; that this article should contain all available information and references so as to bring together as much as possible of what is already known on the subject. It was thought that the article should be submitted to the Journal of the National Education Association, where it would be available to teachers everywhere and that in the event that this journal does not see fit to publish it, it should be submitted to a medical journal and a large number of reprints should be distributed among personnel of school systems.

The examination of teachers and other members of personnel should be the same as that of high school students, namely, x-ray film examinations of the chests of tuberculin reactors, and laboratory and clinical examinations of those whose films reveal shadows which might be due to tuberculosis. The only exception would be the omission of the tuberculin test in communities where there is almost universal tuberculous infection among adults. Here one may proceed directly with the x-ray film examination, but extreme caution must be exercised to avoid leaving the impression that because the chest x-ray film reveals no evidence of disease, tuberculosis is absent, since even progressive lesions may be present in other parts of the body. Moreover, at any subsequent time new lesions may be found in the lungs.

In 1936 and 1937 the Committee was desirous of determining the programs that were already in progress for the control of tuberculosis among the personnel of school systems with the idea of developing a national campaign. Therefore, we have assembled information from various states largely through the Tuberculosis Associations and the physicians who represent the Committee in these states. We have no doubt that in some states our information is incomplete because in the beginning of such an undertaking it is a physical impossibility to procure detailed information from every part of each state. However, since it is the intention of the Committee to repeat this survey from time to time, any work which was omitted in this can be included in subsequent reports.*

We did not expect to find an ideal program in any state, but we were desirous of knowing insofar as possible just what is being done and what is contemplated. While some states have done very little, there is practically none in which an interest has not been manifested and a beginning made. Therefore, we are grati-

*Owing to the length of the material, it is not possible to publish here the reports from the various states.—Ed.

fied to know of the work already in progress. From the reports of the various states, it is obvious that much remains to be done, and we shall look forward to increase in intensity and volume of work in each state until all school systems have personnel that are entirely free from tuberculosis in a contagious stage.

The American Academy of Pediatrics has recently appointed a Committee on Tuberculosis with Dr. Fairfax Hall of Rochester, New York, as chairman. This Committee has decided to work on two major projects: One, the control of tuberculosis among personnel of the school systems of the nation, and the other the control of tuberculosis among domestics. Subcommittees have been appointed in each state and there has been considerable correspondence with your Committee. It seemed that with reference to the work of controlling tuberculosis among the members of personnel of school systems, it would be well if the physician or subcommittee representing the Tuberculosis Committee of the American School Health Association and the subcommittee of the American Academy of Pediatrics would combine their efforts and develop one program, because it was thought that more could be accomplished in this manner than by two groups in each state working independently. The members of our Committee have agreed to this procedure.

Signed:

WM. P. BROWN
HUGH A. BROWNE
H. A. BURNS
H. D. LEES
ESMOND R. LONG
J. B. NOVAK
WM. J. RYAN
JASSAMINE WHITNEY
J. A. MYERS,
Chairman.

* * * * *

Knoxville, Tenn.,*—Considerable success has been reported in a program for combating cold epidemics in the schools. In the early fall, a committee is appointed consisting of a school physician, the head of the attendance department, the directors of the secondary and elementary education, and the supervisor of health. This committee prepares a program of general control measures which emphasizes the regular morning inspections of children, and the reporting of every child showing symptoms of colds. Increased provisions for handwashing facilities have been made in some of the schools.

* * * * *

Minneapolis, Minn.,*—The school board has appointed Dr. Arthur E. Karlstrom as Director of Hygiene and Health Education.

* * * * *

School Traffic Sign,*—In a certain county of one of the Southern states, traffic signs adjoining school buildings read:

Do not kill the children.
Wait for the teacher.

*American School Board Journal, March, 1940, p. 104.

THE PLACE OF KNOWLEDGE IN HEALTH EDUCATION*

LILLIAN B. DAVIS
Assistant Supervisor of Health Education, Baltimore, Md.

Several years ago at a conference on health education, Dr. William H. Kilpatrick dared to question the absolute functioning of habits. He asserted that pupils must be guided to think and to reason through health behavior. He believed that habits are necessary, but that they must be controlled by a thinking individual. Today, competent students are agreed that unless habits are controlled by thought they will not function under all circumstances. Life demands that we continually make adjustments to unexpected situations; habits alone will not help us.

Have you ever seen perishable food taken on all-day picnics without being properly refrigerated? Have you ever seen young children playing on the bed of a parent ill with influenza? Have you ever seen city people attempting to vacation without the modern conveniences of plumbing and sanitation? Have you ever seen adults drink clear water from an untested stream or spring? All of these situations are definitely related to health. How could habits alone function in any of these situations?

Recently leaders in the field of health education began to admit that while habits and attitudes largely govern behavior, nevertheless knowledge also plays an important part. How can a person develop an attitude toward anything unless he is informed about the subject or practice? How can a habit be firmly fixed so that it will function under unusual situations unless the individual knows and understands what to do, how to do it, and why it is done? True, in the primary grades pupils are helped to develop health habits before they can understand the scientific reasons. But unless all conditions are right for the performance of these habits the young child will not know what to do. This is particularly true when children are removed from one environment to another. Habits followed at home are likely to be ignored or forgotten when the family is vacationing. Habits that function well in school may be entirely absent at home.

In no way do I wish to belittle the importance of habit formation, but I do wish to show that a group of health habits will not of themselves produce a healthful individual.

The modern tendency in our general educational program is to develop thinking individuals—persons who can analyze the facts of a situation and think it through to a satisfactory conclusion. Why then should health education be different? *Why shouldn't we try to develop thinking individuals who will base their behavior*

*Reprinted from the Baltimore Bulletin of Education, November-December, 1939, page 43.

*on scientific reasons** and will use their judgment and knowledge in living a full, happy life?

The sum total of all experiences that have any influence on health is included under the title of "health education." Many factors combine in this educative process, but one very positive factor is direct instruction. Usually this is the work of *the classroom teacher whom Turner has called "the keystone in the arch of health training."** In the case of children who need some special attention by reason of defects the physician, nurse, and nutritionist are powerful agents, for their contacts are intimate and personal, and therefore very effective. But the classroom teacher sees all the pupils, day after day, and sometimes year after year. By means of repetition, graded teaching, and example, she has a great influence on the health behavior of most pupils.

During the past years I have had the privilege of observing demonstration lessons in many subjects. I have always been impressed by the teacher's wealth of information, the richness of her background, the detailed preparation she has made, the number of concrete illustrations used, the provision made for many different kinds of learning, and the applications to present-day life.

A rich background of *scientific health knowledge is necessary before a teacher can have confidence and enthusiasm.** Pupils do not readily understand theoretical principles or abstract statements; they need concrete evidence such as illustrations, models, real objects, and experiments. Learning in health, as elsewhere, is accomplished by various means such as reading, writing, talking, hearing, thinking, and discussion. Too many health lessons depend upon discussion as the sole means of learning. A wise precaution is not to attempt to have pupils discuss a problem until they have gained some information on the topic. Incorrect ideas are apt to be accepted and guessing fostered.

While emphasizing the importance of knowledge in health instruction, due consideration should be given to the psychological principles relating to the use of knowledge. The first is that *"Knowledge in and of itself does not necessarily influence conduct,"** and the second, *"Knowledge must serve some drive before it functions in conduct."** Knowledge must be thought of as a tool used to create and develop worth-while living. It is never an end in or for itself. Wise, intelligent health instruction uses health knowledge to serve fundamental drives and desires. In this way health knowledge becomes functional.

* * * * *

Cleveland, Ohio,—Dr. Charles F. Good, a member of the staff of the school medical department for five years, has been appointed Directing Supervisor of Medical Inspection.

*Italics by editorial change. K.

TEACHING HYGIENE TO SLOW PUPILS*

ETHEL E. JONES
Teacher of Hygiene, Patterson Park Junior High School, Baltimore, Md.

Most of the problems met in teaching hygiene to retarded pupils are identical with those which confront teachers of other subjects. Many of these problems arise from language difficulties, due to the pupils' limited vocabulary, inability to study new words independently, low reading ability, and lack of fluency in oral expression. Slow pupils have only a short span of attention, they frequently lack the ability to concentrate even for a short time, and they cannot study independently.

In hygiene many new words are necessarily used and even the pupils who are average or better in intelligence find some difficulty in learning their spelling, meaning, and correct usage. But slow pupils have a more acute vocabulary difficulty and require special help and guidance to learn and understand such words as emergency, suffocation, antiseptic, infection, and stimulant. To help conquer these language difficulties these general techniques have been found helpful:

1. The use of a continuing word list for home study.
2. Brief interesting daily drills featuring the pronunciation and usage of the new words.
3. Work sheets which require the new words in the answers (seat-work material).
4. Reading material containing the new words.
5. Oral and written experiences in using the new words.
6. Frequent checks or short tests to determine whether pupils have learned the words.

A variety of reading materials may be used to a good advantage if the teacher will carefully select the exact sections to be read. However, it is frequently advisable to prepare and mimeograph "key statements" to be placed in the pupils' hands for intensive study, rather than to have them read from the printed page. This method eliminates distracting details and focuses the attention on important items.

The hygiene course of study provides for various types of pupil activity, such as bandaging, experiments on growing bacteria, and digesting food. All pupils, even the slowest, find these activities interesting and frequently ask for others.

All 7B pupils are given the same hygiene tests and careful studies have been made of the results of these city-wide tests. Several years ago, before methods of instruction were specifically modified for slow pupils, their test results were uniformly low. As the methods of teaching have improved, the test scores have risen to the great satisfaction of both pupils and teachers. *These pupils can learn when the methods of instruction are adapted to their particular needs.***

*Reprinted from the Baltimore Bulletin of Education, November-December, 1939, page 45.

**Italics are editorial.

ENRICHMENT MATERIAL IN HYGIENE*

FREDA WOOLERY
Teacher, Garrison Junior High School, Baltimore, Md.

Pupils who are selected to follow the enriched curriculum are capable of deep understandings and wide visions, and the school tries to help them develop to their fullest by stimulating them to work at the high level of their ability. Some of the materials and methods that have been used with such pupils at the Garrison Junior High School during the past three years are given in this article. No one class used all of them; many could be used by regular classes if there were sufficient time.

For the first few weeks of each term classes assigned to the enriched curriculum were given the regular work. They needed this time to adjust themselves to their new school. After they became accustomed to their environment they were given some of the following enrichment opportunities in connection with the unit on first aid.

1. Earning the Junior Red Cross Certificate in First Aid.

This required a practical knowledge of first aid treatments for kinds of injuries other than those which are included in the school unit. Additional work both in the classroom and after school is necessary before a pupil can receive a certificate, and the teacher must be a qualified Red Cross instructor.

2. First aid for fractures (not a part of the unit).

Fractures were discussed and the necessity for immobilization of the bones was emphasized. The class was divided into groups to prepare demonstrations of splinting various parts of the body. The Red Cross First Aid Textbook was used as a reference, and after-school consultations with the teacher were encouraged.

3. Applying the triangular bandage to various parts of the body.

The class was again divided into groups and each prepared and later demonstrated one use of this bandage. After the exhibition, other pupils were given an opportunity to use the bandage in the various ways under the supervision of the demonstrators.

The second unit, the Prevention of Communicable Diseases, offered such a vast background for enrichment that it was difficult to know what to choose. However, pupils' interests indicated that the following problems were worthy of consideration.

1. Broadening the concept of immunity through a study of diphtheria prevention.

In the regular work the pupils had learned that smallpox and typhoid fever could be prevented by vaccination, and that this immunity is produced by using weakened bacteria or their products as vaccines. The pupils asked why all diseases could not be conquered by vaccination. This problem was limited by the teacher to a study of immunization against diphtheria, to keep it within range of the pupils' ability. After the class had studied and discussed the problem they made a detailed summary of the important findings.

2. Home nursing in communicable diseases.

The general reference was an article in *Hygeia*, December, 1935. Several children were asked to read the article and to make reports on the selection of

*Reprinted from the Baltimore Bulletin of Education, November-December, 1939, page 46.

a room in which to nurse a person ill with a communicable disease, how to prepare the room, and the facilities needed in the room. One child dramatized what the nurse did before leaving the sick room; one showed how materials were carried out of the room; and the third child showed what precautions the nurse took before leaving the home.

3. Celebrating a Health Hero Day.

The program for the day consisted of reports of the outstanding contributions made to health by the scientists Trudeau, Lister, Koch, Reed, Roux, and Behring. The teacher introduced the class to Anton Leeuwenhoek, the man who made possible the study of bacteria by inventing the first microscope.

4. Writing an article for the school paper.

The class wrote a paper on "Direct and Indirect Contact" in the style that the Health Department uses when warning citizens during an epidemic.

5. Assembling cartoons and drawings made by pupils as booklets.

One booklet was entitled *Spreading Bacteria* and consisted of 30 pictures illustrating how bacteria are spread in the home, street, public buildings, camps, etc. Another booklet was entitled *Building Up Resistance by Good Health Habits.*

6. Discussion of the opposition received by Pasteur from the medical doctors of his day.

Many children had seen the motion picture, *Louis Pasteur.* When reporting on the play, they invariably glorified Pasteur and presented the doctors who opposed him in a very unfavorable light. The teacher tried to help the class understand that the medical profession had to be extremely critical of any new ideas in their work because human lives were at stake. A few examples of the harm done by men who were unqualified in medical work were given to help the class see that the doctors of today are the best guides in affairs of health.

When studying the unit, How the Body Uses Food, classes following the enriched curriculum broadened their knowledge of the daily food needs by finding out how deficiencies in the diet affect the body.

1. Deficiencies of Vitamin A, B, C, and D.

The class was divided into four groups and each group assigned one of the vitamins. They were asked to find what foods contain the vitamin and to report what effect its absence from the diet had on the body. Later, as each group made its report, the foods in which the vitamins were found were listed on the blackboard. After all of the reports were completed, the list, rather a long one, was compared with the five Daily Food Needs as given in the course of study. It was discovered that all the vitamins could be found in the foods included under the Daily Food Needs except vitamin D. By further reading, the class discovered that this vitamin might be obtained by playing in the sunshine and taking cod-liver oil.

2. Deficiency of lime in the diet.

An experiment was performed to show that minerals, especially calcium, give bones hardness and strength. A small bone was soaked for 24 hours in diluted hydrochloric acid to dissolve the minerals. After this soaking the bone was flexible and could be tied into a knot. Pupils then decided to find out which foods contained the largest amounts of calcium. Again they discovered that the Daily Food Needs included these foods.

The methods used in teaching classes following the enriched curriculum differed in various ways from methods employed with average pupils. Advantage was taken of their greater ability in reading by assigning some of the more difficult text-books as references. Articles from magazines, Hygeia, Readers Digest, and

others, and chapters from books like Microbe Hunters were used whenever advisable.

Frequent opportunities were given these classes to work in groups or committees. Each group, headed by a chairman, prepared a report or arranged a demonstration for the other members of the class. Whenever possible pupils were allowed to consult their neighbors concerning the work. They enjoyed learning from each other and there was rarely any confusion.

In class discussions, questions were asked which required protracted and keen thinking. For example, would it be possible to prevent smallpox in our southwestern states? Who was of greater service to the world, Edward Jenner or Louis Pasteur? How can the stomach act upon food in both a chemical and a mechanical way? Why does the heart beat faster during shock? Which of these emergencies would you treat first, stoppage of breathing, poisons swallowed, or excessive bleeding? Bright children enjoy delving into difficult problems. Thus they are led to achieve according to their ability.

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Cod Liver Oil,—What Every Woman Doesn't Know is that psychology is more important than flavoring in persuading children to take cod liver oil. Some mothers fail to realize, so great is their own distaste for cod liver oil, that most babies will not only take the oil if properly given but will actually enjoy it. Proof of this is seen in orphanages and pediatric hospitals where cod liver oil is administered as a food in a matter of fact manner, with the result that refusals are rarely encountered.

The mother who wrinkles her nose and "makes a face" of disgust as she measures out cod liver oil is almost certain to set the pattern for similar behavior on the part of her baby.

Most babies can be taught to take the pure oil if, as Eliot points out, the mother looks on it with favor and no unpleasant associations are attached to it. If the mother herself takes some of the oil, the child is further encouraged.

The dose of cod liver oil may be followed by orange juice, but if administered at an early age, usually no vehicle is required. The oil should not be mixed with the milk or the cereal feeding unless allowance is made for the oil which clings to the bottle or the bowl.

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THE TESTING PROGRAM IN HYGIENE*

HELEN PERKINS

Teacher, Roland Park Junior High School, Baltimore, Md.

The course in hygiene consisting of three units, First Aid, The Prevention of Communicable Diseases, and How Our Bodies Use Food, attempts to establish habits and principles of living that will provide the basis for efficiency and happiness. As yet there seems to be no way to measure this learning directly, and classroom situations cannot possibly be organized to test the formation of desirable habits in health practices. Hence it becomes necessary to test the pupils' knowledge of the principles of healthful living, and to hope that the instruction which they have received will cause them to apply the principles they have learned. Factual testing in hygiene is also amply justified because the majority of pupils have had no previous knowledge of the essential facts and principles which underlie hygienic living.

In November, 1930, the first objective test in hygiene was used experimentally with a few classes. It attempted to measure pupils' opinions, attitudes, and knowledge in the field of disease prevention, and was used both as a preliminary test and as a concluding achievement test.

Its use as a pretest, however, proved confusing to the pupils because of their unfamiliarity with many technical terms used in discussing the prevention of communicable disease. Instead of stimulating interest the test caused dissatisfaction. An item analysis of the results showed that only a very few pupils answered as many as 60 per cent of the questions correctly. Consequently during 1931 this use of the new test was discontinued because it apparently accomplished nothing.

A very careful item analysis of the results of the test at the end of the term showed almost perfect correlation between the attitudes, opinions, and knowledge of specific items. The pupils' information (knowledge) so influenced the answers to the questions on attitude and opinion that nothing was gained by using the three types. Accordingly it was decided to use only questions that attempted to measure knowledge.

To simplify administration of the testing and to save more time for teaching, an attempt was made to limit the length of the test so that it could be given in one period. A revised test containing 40 multiple-choice questions and 135 items was used by almost all of the 7B hygiene classes during 1933 and 1934. Discussion of this test by a committee of teachers brought out these points: (1) that it was too long, (2) that it depended too much upon reading ability, (3) that it did not actually measure the

*Reprinted from the Baltimore Bulletin of Education, November-December, 1939, page 48.

pupils' knowledge, (4) that it was more satisfactory than tests made by individual teachers, and (5) that it definitely showed which pupils were failing and, therefore, guided teachers in remedial teaching.

Keeping in mind these comments, the test was again revised, issued as Form B and tried out during 1934 and 1935. The test was shortened by the omission of questions that possessed neither diagnostic nor measuring value and by the substitution of suitable completion exercises.

By 1936 this test had been used several times. A comparison of the distribution of the scores of pupils in homogeneously grouped classes showed a uniform gradation from the best to the poorest. In a comparison of thirteen classes taught by four teachers of varying experience, the results were rather enlightening. The classes taught by the best teacher showed the expected distributions with a descent of the peaks according to pupils' abilities. Classes taught by the least experienced teacher showed distribution peaks far below classes of similar ability taught by the experienced teacher. The peaks for classes taught by the other teachers fell slightly below those for classes of equal ability when taught by the experienced teacher. Another teacher has followed the test results of her classes for several years. As she has modified her teaching technique for slow pupils she has raised the peaks of the distribution curves. Sometimes teachers have been surprised when many of their pupils missed a particular item, but a check of their teaching plans generally revealed that this item had been overlooked. Testing has been of great value to the teachers of hygiene in planning remedial work and to guide them in the reteaching that may be necessary.

Since this testing was begun in 1930 the actual unit on the Prevention of Communicable Diseases has been revised several times. The recent edition, issued in 1938, requires modification of the test, Form B, and a committee is now working on this.

For each of the three 7B hygiene units objective tests have been prepared, tried out, and revised several times. These tests are made by committees of teachers representing all schools and all degrees of teaching skill, but the results indicate that the pupils are acquiring a knowledge of the principles of hygiene that are eminently practical.

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Sioux City, Iowa,—Physical Examinations of the teaching staff have been conducted with the approval of the board of education. The examinations were made by a committee of 40 members of the Woodbury County medical society. American School Board Journal, March, 1940, p. 104.

A FOURTH GRADE UNIT ON CLEANLINESS*

LEILA MCCABE

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Editor's Note:—Here is a report of skillful teaching, executed with diplomacy and culminated by practical achievement that illustrates what can be done.

"Miss Blank, will you please change my seat? John is so dirty that I don't like having him in front of me," Margaret asked with a wry wrinkling of her little nose.

Probably every public school teacher has experienced the difficulty of seating a pupil in the classroom in such a way that he will not offend more fastidious members of the class and yet will not be ostracized.

In one 4A class this problem arose again and again within the first week of school, for many children objected to sitting near John because of his lack of cleanliness. These objections supplied to the teacher a real incentive for immediately initiating the health work of the term.

The teacher began her work by making a survey of the class unknown to the children and noting which children needed special help. Her findings were:

1. Papers carefully written by earnest pupils were marred in appearance by smudges from dirty hands.
2. Some library and textbooks were similarly marred.
3. Four children had hands spoiled by bitten fingernails.
4. Six girls had red lacquered nails neatly trimmed with a black edging of dirt.
5. Several children had dirty necks and ears two or three days in succession.
6. Several children wore clothing showing spots from food.
7. New shoes proudly shown to teacher during the first week of school had become scratched and scuffed due to lack of polishing.
8. Two boys were shunned by their classmates at recess and in the room, mainly because of their soiled clothing and unwashed bodies. Both were developing an anti-social attitude toward other children.

The semester topic, *Helping Ourselves Work*, is introduced by a unit on Getting Ready for the Activities of the Day. The children told what they do to get ready for the day. Their list placed upon the board impressed many children with the idea that washing is a process consisting of many operations which some of them were slighting.

Reading health textbooks led the children to a realization that here are many tools useful for washing. Lucy was proud to tell that she had a fingernail brush at home and would like to bring it in to school. Several children then offered other tools and finally Fred suggested, "I think it would be fun for us to bring some of these cleanliness tools and make an exhibit."

Elsie agreed with Fred. "And," said she, "we could show how to use them." So Frances was put in charge of receiving and

*Reprinted from the Baltimore Bulletin of Education, November-December, 1939, page 50.

arranging the contributions, while the class helped her make a list of the tools required. The children all decided to pay particular attention to hands, face, neck, and ears before next health lesson; for, when the teacher suggested an inspection that first day, several boys and girls protested that it was unfair as they had had no warning.

During that week, Frances reminded the children to bring in their tools, and she undertook to secure and paint an orange crate to be used as a wash stand. The collection grew steadily, charts showing tools for cleanliness were made at home, and several children began to show very plainly that they were making freer use of soap and water.

In the lessons that followed, the tools collected by the class were used, for many children demonstrated the use of water, soap, wash cloth, fingernail brush, and nail cleaner. The first demonstration was made by Margaret, who was always neat and clean.

She stood before the orange crate, with basin on the top and tools arranged on the shelf below, and explained carefully, "First you turn on the warm water," and turned an imaginary faucet. "Then you dip your wash cloth into the water and wring it out." Step by step she illustrated the process of washing. When she had finished, although she had never put this class wash cloth into water nor had it touched any part of her but her hands, Scott exclaimed, "She *looks* cleaner even if she didn't really wash, doesn't she, Miss Blank?"

After the initial demonstration by such a good little actress, many of the children wanted to try the demonstration, and several had the opportunity of doing so at once. Louis, whose face and hands were rather grimy, did not offer and refused to play when asked by the teacher. The next week, however, he was very clean, and asked as soon as he reached school if he might have a turn at demonstration. This informal dramatization was carried on for several weeks as a before-school activity.

In health periods, other activities as well were carried on. Two children proved that warm water is more helpful than cold for removing dirt. Others proved that soap actually helps to remove dirt. Many children made fingernail cleaners by covering the ends of tooth picks with absorbent cotton. Others told of prevailing upon big sisters to give them orangewood sticks from their manicure sets. Discussions of cleaning teeth, brushing and combing hair, changing underclothing and socks, and of polishing shoes occurred usually as the children suggested them.

Each time an inspection by the teacher was conducted, more children had conformed to the standard. In the mornings before school, when the children were free to converse, the teacher was gratified to hear such comments as:

Tommie: Look at those new shoes!
Bobbie: I got them yesterday and polished them last night so they won't get scratched.
Pete: I blacked my old shoes last night and look at them shine! But I couldn't get my hands clean afterward. I hope the teacher doesn't inspect today.
Patty: The teacher said I have beautifully shaped hands. I told the lady upstairs, so last night she gave me a manicure. I'm going to keep them just as nice as this always.
Harry: Miss Blank, I started out clean this morning but got dirty playing in the yard before the bell rang. May I go to the lavatory and wash again?

At the end of about eight weeks when the work on cleanliness in health periods was over, the teacher made a second personal survey. She found a definite improvement in the appearance of every child whose name had been listed in the preliminary survey. Those children who forgot to wash at home felt uncomfortable at school, and usually asked for permission to use the lavatory. The children who bit their fingernails were trying hard not to do so, and were often reminded by their classmates. Shoes were much neater because the children themselves cared for them. Many children, even boys, told proudly that they washed their own socks now.

The most noticeable improvement was made by the two outstandingly dirty boys. As far as these children, without parental help, were able to manage, they came to school clean. The class began to be more friendly toward them and no more requests for seat changing occurred.

The whole class proved that cleanliness improves personal appearance, and is an aid in making and keeping friends.

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Teacher's Health,*—A school district in Oregon, under a ruling of the Supreme Court, has implied power to determine by physical examination whether an applicant for a teaching position is afflicted with a communicable disease or is incapable of discharging his or her duties. School District No. 1, Multnomah County v. Teachers' Retirement Fund Association of School District No. 1 of Multnomah County, 95 Pacific reporter 2d 720, Oreg.

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Milwaukee, Wis.,*—The school board recently held up the appointments of 200 probationary teachers, who were completing their fifth semester of service, because 59 had not taken the health examinations required by the board. The teachers were notified that they would not be considered unless their health certificates were placed on file. To date 45 of the teachers had arranged for examination and it is expected that the remainder will comply.

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Kansas City, Mo.,*—The school board has adopted a rule that no home study be required of children below the sixth grade, except after consultations of parents and teachers.

*American School Board Journal, March, 1940, p. 104.

EDITORIAL

"Quo Vadis"

Not for eighty years has our country been faced with so serious a crisis as now confronts us.

Not for eighty years at least, perhaps never before in our history, has the health, physical stamina, and mental firmness of our youth been of so great import to the future of this country—perhaps even to its preservation in the form in which we know it and love it—as today.

Twenty-three years ago we faced another crisis when it became necessary to make an accounting of our physical and mental assets. We were horrified at the conditions found. Twenty-eight per cent of our young men, at an age when they should have been most nearly perfect, were found physically unfit for full service to their country in the emergency.

Following that war, using as arguments, the conditions found and the needs shown, and the fact that many of these defects were preventable through more accurate physical examinations followed by energetic scientific steps in correction and by a more widespread and adequate physical education, local, state, and federal governments have been persuaded to spend enormous sums through the schools and through health departments and hospitals for the prevention, detection, and correction of physical handicaps. Has this money been advantageously spent?

Surveys in various communities indicate that not always has it been well spent, that many communities have progressed but little in the past quarter century in the effectiveness of their efforts to *prevent* the establishment of physical defects in our young people. Physical examinations in the schools are much more common, but are they on the average more accurate in their findings? Are corrections more frequent and better done? Has the enormously expanded program of physical education resulted in a more vigorous and a more determined people? We wonder!

Now is the time vigorously to scan and to overhaul our procedures in school health. Are we *really* examining or merely going through the motions? Are we really building physical skills and stamina by skilled energetic *teaching* of physical activities, or are we merely supporting a process of *entertaining?*

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PROGRAM

The next annual meeting of the American School Health Association will be held at Detroit, Michigan, October 7-11 inclusive.

The program, summarized, is as follows:

Monday, October 7, 8:00 A. M.: "School Health Procedures, Practical and Theoretical." Papers and discussion by W. Carter Williams, M.D.; Joseph G. Molner, M.D.; Vaughn F. Blanchard, and Don W. Gudakunst, M.D.

Tuesday, October 8, 2:30 P. M.: "Public Hearing on the School Health Budget of Anytown." A round table discussion by such leaders in the school and health fields as Reginald M. Atawater, M.D.; N. P. Neilson, Ph.D.; Don W. Gudakunst, M.D., and Bosse B. Randle, Maud E. Watson, Ph.D.; Raymond H. Greenman, Dorothy B. Nyswander, Ph.D., and others.

Wednesday, October 9, 9:30 A. M.: "Are We Emphasizing Service in Public Health at the Expense of Education in Health?" This will be a panel discussion by experts in various school and health fields.

Wednesday, October 9, 2:30 P. M.: "Marshalling Community Forces for Dental Health." Various phases of this topic will be presented from the point of view of the nurse, the physician, the dentist, and others.

Thursday, October 10, 2:30 P. M.: "Evaluation of School Health Practices." This theme will be presented as a panel discussion by representatives of the American School Health Association and of the Michigan School Health Association.

Friday, October 11, 9:30 A. M.: Papers will be presented on "School Health Promotion through (1) Environment, (2) Instruction, (3) Services." "The Physician as Advisor," and "The Coordination of Health and Education Agencies." The speakers will include: Edna Gerken, Mabel E. Rugen, Helen Carey, M.D.; Ella E. McNeil, R.N.; J. N. Wissan, D.D.S.; Arthur R. Turner, M.D., and Walter Wilkins, M.D.

All except the first will be joint sessions with various sections of the American Public Health Association and with the Michigan School Health Association. The detailed program will appear in full in the October issue of The Journal of School Health.

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ABSTRACTS

Diphtheria Immunization Procedures,—The following procedures for obtaining community protection against diphtheria by artificial active immunization have been recommended by the Subcommittee on Evaluation of Administrative Practices of the American Public Health Association:

1. The preferred practice should be for children under school age,[1] and preferably for those at the 9th month of life, (a) two doses of diphtheria toxoid, alum precipitated with a 4 week or 1

month interval between doses, or (b) three doses of diphtheria toxoid at 4 week or 1 month intervals.[2]

2. In communities where it is impracticable to give two doses of diphtheria toxoid, alum precipitated, or three doses of diphtheria toxoid, (1a or b), to all the children between 9 months and 10 years of age, it will probably be found that the giving of one dose of diphtheria toxoid, alum precipitated, to a large number of children of this age group is more effective in preventing diphtheria in the community than the use of the two or three doses (1a or b) for half as many children.

3. To those children receiving one injection of diphtheria toxoid, alum precipitated, a single reinforcing dose of not more than one-half the usual dose of an equivalent diphtheria toxoid, alum precipitated, preparation should be given to each child inoculated in infancy, just prior to the child's entering school at 5 or 6 years of age, or 3 to 5 years after the initial inoculation if this has been carried out at some time later than the first year of life.[3]

4. As a routine procedure the performance of the Schick test 3 to 6 months after completion of the inoculations in infancy is not considered to be essential, although it may be desirable in private practice and whenever the personnel and condition of access to patients at public clinics makes this additional contact practicable.

5. (a) Children of 10 years of age or over who are known to be susceptible as the result of the Schick test should receive three doses of diphtheria toxoid at 4 week or 1 month intervals, or equivalent doses of toxin-antitoxin similarly spaced.

(b) For susceptible adults who may be exposed by occupation to contact with the clinical or carrier stage of diphtheria, the use of diphtheria toxoid, alum precipitated, is not recommended. In the case of adults with occupational hazards (e. g., physicians, nurses, attendants in hospitals for communicable diseases) those reacting to a sensitivity test should not be inoculated;[4] others should receive three doses of diphtheria toxoid or toxin-antitoxin as advised for children over 10 years of age (5a). The routine period of Schick test should be 12 months after completion of inoculation, unless there is a special reason for giving the Schick test earlier. The immunity produced is probably at its highest 3 or 4 months after the completion of the inoculations.

6. The practice of administering diphtheria toxoid in two doses at 3 week intervals should be discontinued.

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[1]If there has been failure to undertake active immunization of a child prior to school age, either of the initial immunizing procedures advised here for younger children can safely be employed for children up to the end of the 9th year of life.

[2]The comparison of the response induced by two doses of diphtheria toxoid, alum precipitated, and three doses of diphtheria toxoid indicate a somewhat higher response produced by the use of the former, although the results in both have been extremely satisfactory. Only preparations of antigenic potency officially acceptable should be used.

[3]Whatever the method of initial artificial active immunization used in infancy or early childhood, one reinforcing dose of half the size used in the initial dose, or series of doses, of an acceptable antigenic agent, whether diphtheria toxoid, or diphtheria toxoid, alum precipitated, should be given to the child at school age (5th to 6th year) or 3 to 5 years after the initial dose, if this was given later than the first year of life.

[4]Some members of the Subcommittee on Diphtheria have successfully protected adults reacting to the sensitivity test by using doses of toxoid or of toxin-antitoxin smaller than those used for non-reactors.

Health News, New York State Department of Health, April 8, 1940, p. 61.

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Diphtheria,—An analysis of reported mortality from diphtheria in New York State from 1898 to 1937 seems to indicate that some factor tending to reduce mortality has been in operation at least since 1900, but that the rapid acceleration in the decrease in mortality in recent years coincides with the increase in artificial immunization.

An attempt was made to measure the comparative efficacy of the three different immunizing agents used extensively in the state in terms of immunity as measured by Schick test surveys and by the incidence of clinical diphtheria among the groups of individuals given immunizing treatments with the different agents. The gross results of treatment with the different agents, measured by Schick test surveys in two cities in 1938, seem to indicate no difference in the efficacy of toxin antitoxin and alum precipitated toxoid, but significantly inferior results following fluid toxoid.

I* shall deal particularly with only two of his topics: (1) the factor necessary to produce a significant decline below the trend in diphtheria mortality, and (2) the relative value of different immunizing agents. A chart that I have prepared of diphtheria mortality rates in Buffalo from 1881 through 1938 shows that a significant decline below the downward trend occurred first in 1934 and continued thereafter. Buffalo, with one-tenth the population of upstate New York, had from 1930 through 1933 one-third of all the diphtheria deaths or an average of 30 resident deaths per year. From 1934 through 1938, however, Buffalo had only three resident diphtheria deaths per year, or a rate approximately equal to that of upstate New York. The immunization of over 70 per cent of the children aged 5 to 9 years did not diminish the diphtheria mortality rate significantly. The sudden change in diphtheria mortality in Buffalo was immediately preceded by the first house-to-house canvass of the city to secure the immunization of children under 5 years of age. The canvass made in 1933 by 50 W. P. A. nurses assigned to the Visiting Nursing Association raised the percentage of children under 5 years of age who had received a diphtheria immunizing agent from an average of less than 28 per cent for the preceding four years to 39 per cent. Visitation of homes of newly

*Discussion by Archibald S. Dean, M.D., District State Health Officer, Buffalo, N. Y.

born babies subsequently maintained the percentage at approximately 38. Support is thus given to Dr. Godfrey's statement in the *American Journal of Public Health* for March, 1932, that the immunization of 30 per cent or more of the under-5 age group, in addition to more than 50 per cent of children 5-9, has in several instances produced an immediate and striking decline in the diphtheria rate of the community as a whole. Changing Factors in Diphtheria Immunity, Its Production and Duration, by E. L. Stebbins, M.D., H.S. Ingraham, M.D., and H. L. Chant, M.D., Albany, N. Y., (New York State Journal of Medicine, April 15, 1940, p. 663.)

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Tuberculosis in Schools,—Although only one child in 250 in Los Angeles junior and senior high schools has tuberculosis, 23 out of every 100 have taken into their bodies the germs which cause the disease, and must be followed up in order to prevent actual disease from developing.

This was revealed in a preliminary report of three years of tuberculosis work in the schools, issued by Herbert I. Sauer, Director of Social Studies of the Los Angeles Tuberculosis and Health Association.

The Association, in co-operation with the Board of Education, the Parent-Teachers Association, and the W.P.A., tuberculin tested 50,342 students from December 1936 to December 1939.

"Of this number, 11,575 or 23 per cent, reacted," said Mr. Sauer. "A positive tuberculin test does not necessarily mean that a person has tuberculosis. It means only that the germs of tuberculosis have entered the body and that an X-ray of the chest should be made to determine what damage, if any, the germs have done.

"X-rays were made of 10,474 students," he said. "In the cases of more than 1,000 students, shadows observed on the X-ray film indicated a need for further X-ray or clinical observation in order to determine whether active tuberculosis was present and to spot it at its first sign if it does develop. During the months that observation of this type continues, the physicians and nurses on the project give advice and instruction to these students regarding rest, restricted exercise, nutrition, and proper hygiene. After from six months to a year or more of observation, some cases may be dismissed as non-tuberculous.

"Some other students are not so fortunate," according to Mr. Sauer, "because according to the shadows on the X-ray film, about 200 appear to have the serious reinfection type of tuberculosis. More than 100 of these are active; a few have been dismissed as apparently arrested, and most of the remainder are being examined periodically to determine whether the disease is active.

"By continuing to examine these students periodically, tuberculosis, if it does develop, is discovered in the earliest stage while

the student still feels all right. Sanatorium treatment instituted during this early stage is almost certain to bring about early and complete recovery." From: Los Angeles Tuberculosis and Health Association—122 East 7th Street; Tr. 6584; Glenn V. Armstrong. Abstracted in: Health News, The Los Angeles City School District; June, 1940; pg. 9.

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Obesity in Childhood,—Bruch obtained information regarding the eating habits of 136 obese children from 2 to 13 years of age. The parents of 80 per cent of the children recognized that the food intake was larger than average. In the remaining 20 per cent it was described as normal or small, but the "normal" and "small" were not so much an estimate of the child's food intake as of the parents' exaggerated expectations as to what the children should eat. In all cases food intake was in better agreement with the rate of gain in weight than with the excess in weight. A preponderance of starchy food was shown. The emotional development of forty of the patients and their mothers was studied. The majority of the children had been exposed to prolonged overprotection. They exhibited signs of immature behavior not only in their eating habits but in other respects. For many obese children deprived of other outlets and satisfying contacts, the intake of food had gained an inordinate importance. Prolonged overprotection of 35 per cent of the children was partly explained by the fact that they were only children, and another 35 per cent were youngest children. In many instances a great difference in age or the death of another sibling accentuated the peculiarity of the family position. Increased desire for food frequently became manifest only after some upsetting experience: fear for the integrity of the body and of suppressed aggression. The maternal attitude was sometimes shaped by deprivation during her own childhood and rejection of the child. In all instances the offering and receiving of food represented an important emotional tie in the mother-child relation. Only 5.6 per cent of the patients came spontaneously for treatment of obesity. This group showed the best degree of cooperation. The poorest cooperation was shown by the children who came to the clinic with the definite expectation of receiving glandular injections for correction of the excess weight. A hypothesis is advanced that emotional experiences call into play functional disturbances of the hypothalamus which may be of importance in the large group of obese patients in whom no organic lesion can be detected. The Journal of the American Medical Association, June 8, 1940, p. 2331.

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Swimming Pools,—To the Editor:—We are endeavoring to obtain a municipal swimming pool in our community and there seems to be some opposition from the point of view of health. Is this opposition justifiable? What methods of purification are used in modern pools? Which is the best? How effective are they? What

is the possibility of transmitting disease, including venereal disease? How can it best be avoided? John T. Hecker, M.D., Cedar Rapids, Iowa.

Answer,—The modern swimming pool with proper management and operation affords as safe and sanitary a place to swim as can be found anywhere. Sanitation of the modern concrete or tile swimming pool is based on the same principle as sanitation of the supply of drinking water for cities which have a water supply that is originally polluted. This consists of filtration through a set of pressure or gravity filter tanks, and treatment of the water with the proper amount of chlorine or ammonia or both. The use of chlorine plus ammonia forms chloramine, which is practically non-irritating to the eyes, renders the chlorine more stable in the water when exposed to the sun and air, tends to prevent the growth of algae and permits the use of smaller amounts of chlorine in the water. The water in the modern pool can be kept at drinking water standards of purity. Purification of the water may also be accomplished by the use of sodium hypochlorite. Purification by the use of ultraviolet rays, ozone or a silver electrolytic system were methods used in the past, the effectiveness of which has been the subject of debate. It is important that a municipal pool be under proper management and that simple regulations regarding hygiene, the use of foot baths of sodium hypochlorite to prevent development of ringworm, athlete's foot, and the like be employed. See Montgomery, Hamilton: The Modern Swimming Pool: Its Sanitation and Safety, **Proc. Staff Meet., Mayo Clin.** 11:561 (Sept. 2) 1936, and the annual manuals issued by **Beach and Pool** magazine, which give rules and regulations regarding swimming pools, instruction and maintenance of pools, and other information.)

There is no danger of transmission of a venereal disease in the pool. Proper sanitation of toilets is obviously necessary. Certain individuals may develop infection in the ear through forcing bacteria up the Eustachian tube. These individuals or those with open ear drums have to be warned against the danger of diving. No endemics of respiratory infections appear to have been reported from a properly designed and operated municipal pool. Journal of the American Medical Association, May 18, 1940, page 2049.

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"School Sickness",—One of the most troublesome problems is the child who will not attend school. I do not refer to the truancy of the runaway or of the adolescent; that is a story in itself. I refer rather to the child who cannot enter the school building or sometimes even leave home without becoming ill. The use of force only makes matters much worse and the child may become violently ill. The symptoms of this illness are those of anxiety: palpitation of the heart, pallor or flushing, rapid and shallow breathing, breaking into perspiration, nausea, vomiting, weeping, etc. Sometimes you are inclined to think the child is "putting it on," but if you

have ever seen such illness you may change your mind as to that.

This phenomenon may occur at all ages, but is most frequent in early adolescence. Sometimes the cause is relatively simple, e. g. the fear and trembling and screaming of a little kindergarten girl one day when school time came around. When traced down, it turned out that the day before she had seen and heard the man principal spank a boy whose vociferousness scarcely concealed the fact; she was entered in a neighboring school with an attractive and warm-hearted young lady principal, and the trouble disappeared forthwith. But usually the cause is much more complex and often impossible to discover. Psycho-analysis has shown that certain unconscious fears and wishes are active in producing the conscious anxiety symptoms when the effort is made to leave the house and go to school. Only a detailed Freudian analysis would uncover these causes, a procedure too long and expensive. In my experience, these conditions seem to be transient phases in the course of adolescent development, often with a sexual connotation. Temporary medical exclusion, with a home teacher, usually permits the unconscious conflicts to readjust themselves and the child later becomes anxious to return to school. A thorough physical and endocrine checkup should be done because indicated treatment seems to hasten recovery.

The important thing is to make a sympathetic effort to find the causes of this baffling behavior. Brusque suppression defeats its purpose in that it may fix the patterns and cause additional trauma and thus prolong the difficulty. Mental Hygiene Problems, Arthur R. Timmie, M.D.; Health News, The Los Angeles City School District, June, 1940. p. 14.

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Staff Education,—Can we improve the quality of service of the physician in the schools This question is or should be faced by every honest administrator of a school health program.

Dr. Wheatley* describes a distinctly new device for "in service" training of physicians working in schools. A democratic method increased interest and influenced attitudes. Incidentally he gathered valuable data concerning factors associated with malnutrition. He indicates how a new procedure was launched in the school health program of our largest city.

Of course there are still many places in this country where physicians and nurses have not yet been given a place in the school. But whether the physician is well established as a part of the school health staff, or whether he is about to be accepted, we need careful thought on the problem of how to use the professional experience and training of the physician. Dr. Wheatley says: "Instead of being merely a medical inspector, his greater opportunity comes in being a medical advisor in the school.—the school physician must assume professional leadership with parent, nurse, and teacher in recognizing and planning the follow-through

for health problems." This report growing out of the New York City School Health Study experience goes far toward answering the question—"how to imbue our school medical staff with this new point of view."

Some school health workers may learn from the literature, others may profit from lectures and papers read at professional meetings, but most of us "learn by doing" but not by doing the same sterile routine in the same old way. Here is a suggestion for state officials who want to see improvement rather than an entrenchment of old formulas. Here is a scheme that worked in a set-up designed to reach nearly a million children. Here is "in service" training that deliberately brought a change that did not contribute to the administrative machinery and was in no way motivated by the legal requirements of the service. Abstracted from American Journal of Public Health, May, 1940, page 542, by Harold H. Mitchell, M.D.

* "Staff Education through the Study of Malnutrition in School Children," George M. Wheatley, M.D., Assistant Director, New York City School Health Study Committee, Astoria, N. Y.

Read at a Joint Session of the American School Health Association and The Food & Nutrition and Child Hygiene Sections of The American Public Health Association at Pittsburgh, Pa., October 17, 1939.

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Barrington, Ill.,—A free lunch program, on an experimental basis, is being conducted in the schools. Meals are prepared for indigent children by the home economics department, with the assistance of a volunteer worker from the parent-teacher association. American School Board Journal, March, 1940, p. 104.

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REVIEW

Health for High School Pupils. A Public Health Study of the Adolescent in a New York City High School of 6000 Pupils. 1937-1938. William Schmidt, Progressive Education Association, New York. 1938.

This mimeographed report gives the details of the first year of an intensive study of health problems peculiar to adolescence and the needs of a health service in a large metropolitan high school. A preliminary section gives a short historical background of school health programs in the United States and a survey of current practices in the high schools of New York City. The remainder of the report can conveniently be divided into three parts.

1. *The study of day to day illness as evidenced by referrals to an infirmary.* Teachers could send children or pupils could come on their own initiative. The need for continuous medical and nursing service was evidenced by the fact that two out of every three pupils sought medical aid some time during the year and that the majority of these came of their own volition, with an

average of 67 to 94 calls per day. A number of serious abnormalities were discovered in this way, and the opportunities for individual adjustments in school programs and for sound health education in a group of young persons who should be learning to assume responsibilities for their own health were abundant.

2. *Study of a sample group of pupils with detailed personal history, medical examinations and tests.* A high prevalence of medical and dental defects were found. Thus out of 100 pupils only 12 were completely free of diagnosable defects; 15 required only care for eyes and teeth, or both; 55 other medical advice or diagnostic or therapeutic procedures; and as many as 18 in each hundred required medical supervision or treatment. Many of the children known to have defects were not receiving appropriate medical care. Each group of defects is discussed in detail: orthopedic, cardiac, emotional, allergic, auditory, nutritional, skin, etcetera, and these sections constitute one of the most interesting parts of the report. Three hundred forty-one pupils were carefully studied and mass audiometer, paper x-ray and Mantoux test surveys made of over 5,000 pupils.

3. *Health guidance service in high schools.* The short section on environmental hygiene, health education, place of personnel and use of "rapid" examinations contains a few pertinent suggestions.

The report ends with specific recommendations for the New York high schools and the plans for the succeeding years of study (1938-41) which are now in progress.

That a health service for adolescents should differ from that given in elementary schools becomes obvious; the inadequacy of "medical inspections" and the usefulness of mass techniques are striking. It seems easy to agree with Dr. Schmidt that "if the goal is to go beyond the recognition of defects to their treatment and correction, a permanent medical staff for health service in the high school is essential" and that such a staff need to be equipped to deal with problems peculiar to the adolescent. Abstracted by Leona Baumgartner, M.D.

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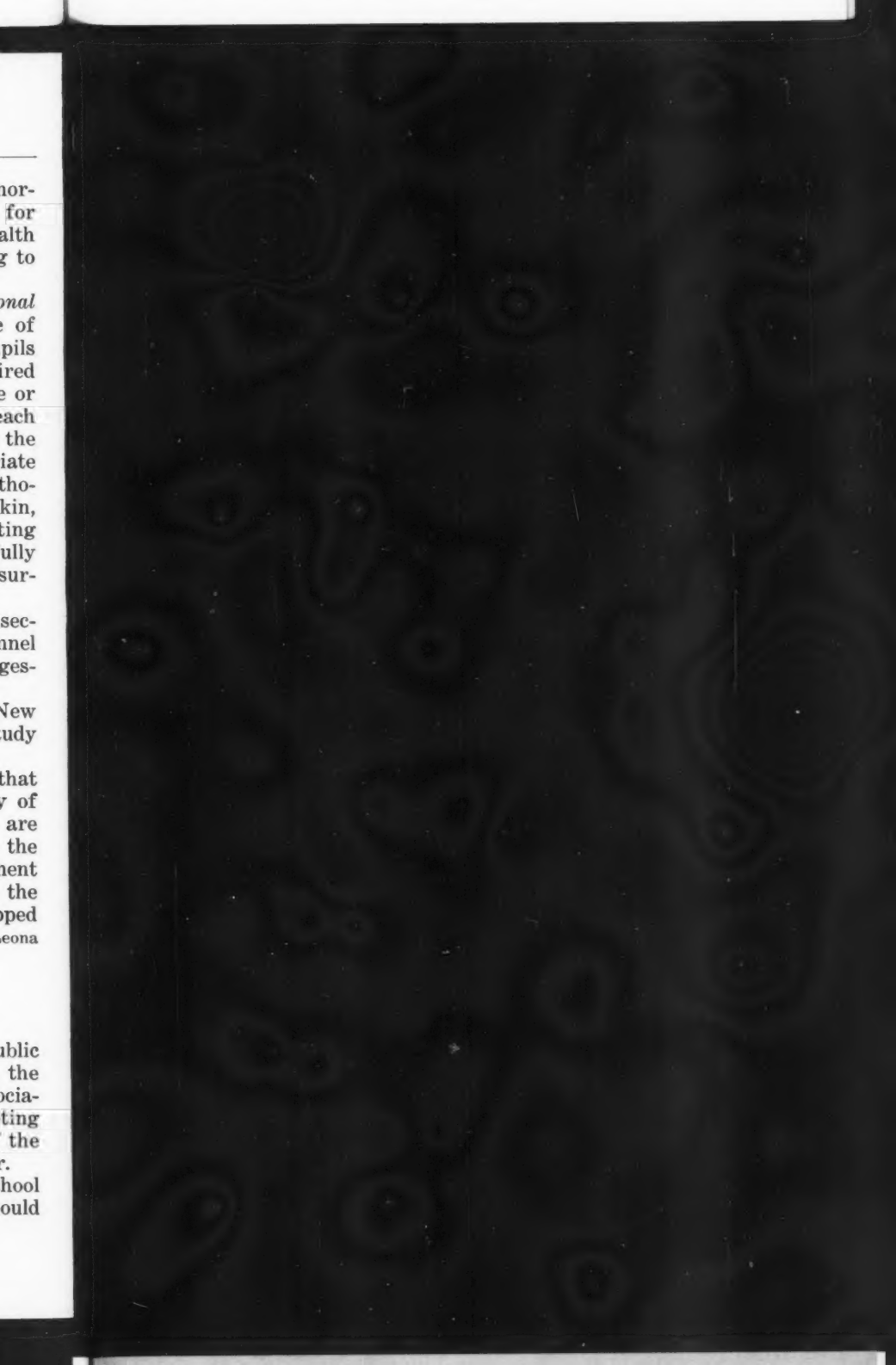
MEETING

The American School Health Association, the American Public Health Association, the Michigan Public Health Association, the International Society of Medical Health Officers, and the Association of Women in Public Health will hold their next annual meeting at Detroit, Michigan, October 8-11, 1940. The headquarters of the American School Health Association will be at the Hotel Statler.

A brief summary of the program of the American School Health Association appears on page 217. Hotel reservations should be made immediately.